

INCREASING ADHERENCE: LEARNING TO COUNSEL YOUR PATIENTS FOR BETTER
OUTCOMES

Capstone Project

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ABSTRACT

The biomedical conceptual model emphasizes the concept of disease or absence of disease for diagnosis whereas the biopsychosocial model emphasizes social and emotional factors for diagnosis. This concept of incorporating social and emotional factors has led to development and research into the importance of the patient-healthcare professional relationship. A patient who trusts his or her healthcare professional is more likely to divulge emotional issues. Additionally, it is important to train healthcare professionals to identify emotional issues and to work with the patient to increase quality of life. The patient's concerns must be addressed for the patient to follow the clinician's plan. For example, with a patient whose main concern is his or her relationship with a family member with whom they only speak on the phone, phone communication strategies must be addressed. It is important for clinicians to understand medical recall and medical literacy of their patient populations. A good relationship between the clinician and patient should identify recall patterns and strategies in order to facilitate treatment and increase quality of life. The purpose of this capstone is to provide a comprehensive overview of several of the tenets of patient-centered care, including the conceptual biomedical and biopsychosocial models, the formation of the patient-audiologist relationship, and the importance of medical recall and medical literacy.

Keywords: Patient-centered, biomedical, biopsychosocial, medical literacy, medical recall

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Chapter I

Introduction

Adherence is an important concept in the healthcare world – how to define it, how to measure it and how to increase it. Many healthcare providers use the terms “compliance” and “adherence” interchangeably; however, they are two different concepts. The term “compliance” is defined as the extent to which the patient’s actions correspond with the medical advice he or she was given (Haynes, Taylor & Sackett, 1979) and corresponds to the biomedical model of patient care. Noncompliance implies that patients are disobeying the advice of their healthcare providers. This noncompliance is attributed to many factors and assumes a negative attitude of the patient. Compliance also places the patient in a passive, unequal role in their care plan (Delamater, 2006). Adherence, however, is the active, voluntary and mutual involvement of the patient and health care professional in a jointly acceptable course of behavior to generate a beneficial result (Meichenbaum & Turk, 1987), and corresponds to the biopsychosocial model of patient care. The concept of adherence is the concept of choice and mutuality in goal setting, care planning and implementation of said care plan. Patients internalize the care plan and then either agree with it and adhere or do not adhere (Delamater, 2006).

Adherence measurement can be broken down into direct and indirect methods. Direct methods include direct observations made by a healthcare provider such as measuring a prescription level in the blood (Osterberg & Blaschke, 2005). For audiologists, there are not many direct methods of measuring adherence; however one example would be datalogging, which involves measuring the wear time and environments of amplification within a hearing aid. Indirect measures of adherence include the use of questionnaires that monitor a certain aspect of

the patient's life (such as satisfaction with amplification), the patient keeping a medical diary and/or reports from caregivers or family members (Osterberg & Blaschke, 2005).

Increasing adherence in audiology is an important concept. However, it can be difficult to do so. It is also one of the primary foci of this document. Of the adult population in the United States, 17% have a hearing loss, translating into more than 36 million Americans (NIDCD, 2010). When comparing this percentage to other chronic conditions, hearing loss is similar in prevalence to depression (18.67% of the population) and more prevalent than diabetes mellitus (11.93%), obesity (11.9%), and osteoarthritis (9.93%), (Ornstein, Nietert, Jenkins & Litvin, 2013). It is also known that the incidence of hearing loss increases with age.

Approximately one-third of Americans between the ages of 65 and 74 have a hearing loss and nearly half of those older than 75 have a hearing loss (NIDCD, 2010). Of this population, only 20% of those who might benefit from hearing healthcare services seek help (Davis et al., 2007) which translates to a large number of Americans, nearly 29 million, who could benefit from audiologic services who are not seeking out treatment. On average, patients wait to seek treatment for 10 years after their initial diagnosis of hearing loss through a hearing screening or formal audiologic assessment, delaying treatment until they cannot communicate even in more favorable listening situations (Davis et al., 2007). Adults with hearing loss who were not wearing amplification and their significant others exhibit higher rates of depression, anxiety and other psychosocial disorders. The same study also found that, conversely, hearing aid use is associated with better quality of life for the hearing aid user and their spouse (Kochkin & Rogin, 2000) Hearing aid use has also been shown to correlate with reduced risk for dementia (Lin et al., 2011).

Knowing that many patients postpone treatment that would result in increased quality of life with intervention is a call to action for audiologists. As healthcare transitions from a medical model to more patient-centered models (Grenness, Hickson, Laplante-Levesque & Davidson, 2014a), clinicians such as audiologists must transition their modes of communication to facilitate optimal quality of life outcomes for the patient. Although there are barriers to communication with patients, especially those with hearing loss, there are certain steps a clinician can take to increase understanding of treatment, and therefore increase adherence.

Salonen, Johansson, Karjalainen, Vahlberg, Jero & Isoaho (2013) recently showed that even among hearing aid users, there are a significant number who are not wearing their aids consistently. Only about 55% of the hearing aid users in this study wore their aids on a daily basis, with only 27% using the aid more than six hours a day. The percentage of users in this study who never used their hearing aid was 10%.

With the knowledge that many people with hearing loss are not following through with treatment, and those who own amplification are not using it consistently, it is time for a change in the manner in which audiologists interact with patients. A change in the conceptual models in which patient care is framed along with better audiologist-patient relationships, increased counseling skills and empathy, and knowledge of medical memory and literacy can combine to create a better environment for open communication with patients and better patient satisfaction.

Chapter II

Review of the Literature

Whether there has been a paradigm shift in the way that clinicians are expected to interact with their patients or the fields of rehabilitative healthcare are paving their own ways, it is important to acknowledge the existence of several conceptual models of patient care that impact how professionals interact (Gzil et al., 2007). Professors, mentors and preceptors, textbooks, and professional organizations all encourage medical professionals, including audiologists, to follow certain practices that are often encompassed in a conceptual model that shapes all patient interaction (Engel, 1978). Although there are several conceptual models that have been developed related to patient care, one model that is most commonly discussed in the literature historically is the biopsychosocial model. This model, initially described by George L. Engel in several seminal articles (1960, 1977, 1978, 1981), focuses on a combination of interpersonal relations and outside factors, such as age, gender and lifestyle, that are involved in the disease process. The biopsychosocial model is in contrast with the biomedical model, and will be used as a basis for this capstone.

The Biomedical and Biopsychosocial Models

The biomedical model is the conceptual model that is based on the Western approach to medicine that defines health as the absence of disease, pain, or defect. This conceptual model focuses on pathology, biochemistry, and physiology but does not include the role of social and emotional factors or individual subjectivity (Engel, 1960). The central concept of the biomedical model is that of “disease” and “absence from disease.” In this model, the term disease refers to any deviation from the normal functions of the body that results in unwelcome consequences for the individual. Objective disease indicators and subjective symptoms are considered to be

indicative of physical abnormality, and all treatment in this model should be directed towards identifying the abnormality and finding a cure. In this model, a proper diagnosis is essential in order to provide a prognosis, an underlying cause, and to direct treatment (Engel, 1960). For many medical conditions, this model is a logical approach, albeit not necessarily the best approach (Michie, Miles & Weinman, 2003). For instance, in oncology, the biomedical model identifies the source of the symptoms, such as cancer. The diagnosis itself spurs the treatment, in this example often chemotherapy or radiation, and allows predictions of the time course and likelihood of becoming free from the cancer itself. The treatment would not begin until a pathology is identified.

Although many tenets of this model are applicable to medical treatment, some of the assumptions of the biomedical model can actually be counter-productive to treatment, such as ignoring emotional and socioeconomic factors. This model focuses on resolving the deviation from the norm and restoring the patient to a state that is absent of the disease (Engel, 1960). In the case of hearing loss, some aspects of the biomedical model may apply, since conditions such as otitis media or tympanic membrane perforation can be medically treated and corrected, rendering the patient “disease-free.” However, most forms of hearing loss do not have “cures.” Additionally, focusing entirely on the pathology can leave out many of the interpersonal dynamics and emotional issues that should be taken into consideration, such as family dynamics and motivation (Engel, 1960), which have a significant role in addressing hearing loss.

In the biomedical model, the professional is seen as the authoritarian figure who should make prescriptions for the patient to adhere to in order to cure the disease. This prescription, in this example based on hearing loss alone, should be followed without any input of social, psychological, or other outside factors, with little input from the patient. The diagnosis would

guide treatment, regardless of other factors (Engel, 1977). Even language used by healthcare professions reflects this separation between pathology and patient personality or mode of life. It is stated that someone “*has*” a disease or that a disease is “treated”. It is separate from the patient’s identity (Veith, 1957).

Although the biomedical model is still a common conceptual model used to shape healthcare, it lacks depth and social considerations. For healthcare professionals, and especially audiologists, the role for the patient most often lies not in curing the problem but improving quality of life through better communication (Engel, 1978). Therefore, a different conceptual model must be considered to shape patient interactions.

In contrast to the biomedical model, the biopsychosocial model emphasizes that laboratory documentation, such as an audiologic assessment, may indicate the disease potential but not the actuality of the disease. The presence of a hearing loss can, at best, serve as a predictor for hearing handicap but can really only be considered as one factor of many (Engel, 1960). Additionally, the hearing loss cannot account for the entire hearing handicap on its own (Engel, 1977). Where the biomedical model may bypass the patient’s own verbal account in favor of objective results, the biopsychosocial model emphasizes the discussion of psychological, social, and cultural factors in the disease process.

Although Engel’s research initially focused on infectious diseases such as tuberculosis, many of the concepts he presented applied to other types of health conditions, such as hearing loss. Social and cultural factors often influence how hearing loss is experienced by a patient, family or friends, and even the audiologist or physician. These factors often may influence what concerns the patient brings up to the audiologist, such as difficulty communicating with friends and family members, and what concerns they choose to minimize or conceal, such as cosmetic

concerns over the appearance of the hearing aid. These same factors also determine if, how, when, and where the patient chooses to seek help. In some social settings and cultures, it is expected to seek medical help as early as the concern is realized whereas other social settings and cultures may see intervention as the last resort. These factors influence the perception of being ill or reduced quality of life for each individual (Engel, 1960).

Defining hearing loss: A functional perspective

Although hearing loss is often described in terms of impairment, it may be more appropriate to refer to it as a hearing “disability” or “handicap” in the context of a biopsychosocial model. An impairment, using the World Health Organization’s 1980 definitions, is the loss or abnormality of the psychological, physiological, or anatomical function, or structure. In this context, the impairment is the physical problem with the hearing system, for example dysfunction of the outer hair cells. A disability is the restriction of ability to perform the activities that are considered normal for a human being or, more generally, the impairment’s impact on activities. With hearing impairment, the disability is often the inability to hear. Lastly, a handicap is the disadvantage for the individual due to disability that prevents fulfillment of normal roles. For someone with a hearing impairment, their handicap may be the inability to take part in verbal conversations. There is not delineation between the definitions of hearing handicapped and not handicapped nor are all factors in this determination equally important. One might try to quantify a pure tone average, degree of hearing loss, word recognition scores or other audiologic measurement, however handicap is determined by the inability to perform normal roles, such as communicate, and not by the impairment itself. Different individuals may have the same impairments, such as moderate hearing loss, with similar disabilities, inability to hear speech at a conversational level, and have different handicaps. For an individual who lives

alone and enjoys reading books, their handicap would be less than an individual with a job that requires frequent phone conversations, a large family with whom they live, and hobbies that include listening to music and watching television.

More recently, the World Health Organization (2002) has released updated definitions that expand upon the previous definitions. The biopsychosocial model was utilized to update the international classification of functioning, disability and health (ICF). In this model, disability and functioning are defined by the interaction between the health condition (disease, disorder or injury such as hearing loss) and contextual factors. Contextual factors can be further divided into external environmental factors (such as social attitudes and climate) and internal personal factors (such as gender, age, social background, and more.) Disability in this new model involves dysfunction at one of more of the levels of impairment, activity limitation, and participation restrictions.

A patient may have a hearing loss for years that does not become apparent until their social situation changes. This does not mean that they did not previously have a hearing loss; however they only more recently became aware of its impact. The absence of a complaint cannot equate to the absence of disease. The hearing loss may also result in disruption in the family unit, the perceived loss of communication with a family member (husband, wife, mother, father, child, etc.), the increased burdens perceived to be imposed upon the rest of the family, the feelings of ambivalence or anger toward the person with hearing loss all of which may create significant psychological problems (Engel, 1960).

Conversely, the patient may identify hearing or communication complaints without any deficits in the conventional pure tone detection test. They might be labeled as a “malingerer,” “attention-seeker” or simply having “normal hearing acuity.” It is not always appropriate to state

that “nothing is wrong” and dismiss the patient from care (Engel, 1960) as the patient reports a functional disability even when a biomedical model of care may not be able to fully explain the patient’s perceived deficits.

Medical practitioners, including physicians, are often judged to have been more sensitive and humble prior to the presence of “science,” which some believe dehumanizes current practitioners. Physicians of the past are noted to have been exceedingly compassionate and full of common sense, often attributed to their lack of scientific knowledge and desensitization. It is necessary, however, to apply scientific principles and method to the more human dimensions of patient care. Engel (1976, 1978) stated that there is little historical data to support the notion that past generations possessed more compassion or concern than current physicians. Regardless of the historical perspective, the fact remains: patients demand empathy and understanding from clinicians. Often the patient’s criteria for how they feel, function, relate, and make choices are based in psychosocial criteria over the physical complaint. The key to optimal patient care lies within the standards of collaboration, communication, complementarity, and competence (Engel, 1978).

Chapter III

The Patient-Audiologist Relationship

Patient-centered care describes the ideal where the patient is seen as an individual who experiences their health independently and needs to be informed and involved in health decisions, especially in cases with chronic diseases. Outcomes associated with the patient-centered approach include improvements in patient and practitioner satisfaction, improvements in patient adherence, and improvement in patient health status. Although there has not been much research in audiology focused on patient-centered care and the patient-audiologist relationship, many other branches of medicine including clinical psychology have begun to emphasize it (Grenness, Hickson, Laplante-Levesque & Davidson, 2014a).

Patient-centered audiological rehabilitation is focused on individualized care and can be divided into three categories: the therapeutic relationship, those involved in the relationship, and information exchange. The category of therapeutic relationship emphasizes the importance of and nature of the audiologist-patient relationship. The key to this relationship is trust. (Grenness, Hickson, Laplante-Levesque & Davidson, 2014b). Trust is particularly important in audiological care due to the underlying financial and commercial component of hearing aid dispensing. The second category is related to the “players” involved in the relationship – the audiologist and the patient. While it is acknowledged that the patient has an important role in this relationship, the role of the audiologist was found to be more important in defining the relationship (Grenness et al., 2014b). Lastly, the clinical processes of information exchange and decision-making is also important. Patients often remark that they want their “story to be heard.” This involves addressing the patient’s individual life experience and their personal emotional

needs. Audiology patients often report wanting to have a larger role in their own decision-making process, such as in the hearing aid selection process.

As noted by Engel, the relationship and rapport between the patient and audiologist is a significant factor in adherence. Since adherence is the active, voluntary, and mutual involvement of the patient in a mutually chosen course of treatment to generate a beneficial result (Meichenbaum & Turk, 1987), corresponding to the biopsychosocial model of patient care, the importance of relationship and rapport is logical. The patient must trust the treatment plan and that the recommendations made by the audiologist are appropriate. The patient must also like and/or respect the audiologist enough to follow through on treatment. Effective communication is a central function which should not be overlooked in this process. Most of the essential diagnostic information arises from the case history and subsequent interviews obtained from the patient. The clinician's interpersonal skills and likeability can determine the patient's eventual satisfaction and compliance, which increases positive health outcomes. The quality of patient interaction has been shown to influence patient outcomes even more than the quantity of teaching and instruction (Bartlet et al. 1984). Skills such as active listening, demonstrating empathy, providing quality information on the findings or diagnoses, availability of health professional, manner of communication, trust, and ability to comfort are often given as the most important factors for patient satisfaction (Matthews, Sledge & Lieberman, 1987). Increasing public dissatisfaction with deficiencies in clinical communication can result in increased dissatisfaction with the medical profession. This issue has been raised worldwide and the results of many of these studies have confirmed that there are serious communication deficits in many clinical professions that lead to patient dissatisfaction and may impact adherence to healthcare

recommendations (Brighina, Saporito, Aloisio, Morreale, & D'Agati, 2005; Hambly, Robling, Crowne, Hood & Gregory, 2009; Heineken, 1998).

Personal adjustment counseling can be an important part of the audiologist's scope of practice as long as certain requirements are met. Professional counseling involves trained mental health professionals, such as psychologists, social workers, and psychiatrists, who use their advanced training to help clients find ways to solve life problems. Patients with hearing loss may be referred for these services on an individual basis. In contrast, nonprofessional counseling skills are often used in healthcare appointments, including those in audiology. Nonprofessional personal adjustment counseling can be used when there are emotional issues related to the professional's specialty, such as a patient with hearing loss who may encounter communication issues with their spouse. Maintaining professional boundaries during nonprofessional counseling to address a patient's concerns in a healthy and appropriate manner is critical, although professionals in nonprofessional counseling situations must recognize their limitations. When an interaction reaches a "red flag" or "gut feeling" of being inappropriate, the boundaries of counseling must be respected. This inappropriateness may refer to the content, such as feelings, attitudes, or problems related to hearing loss, or the style of the interaction, such as intimidating or threatening (Clark, 1999). It is not appropriate for nonprofessional counseling to include marital problems, substance abuse, financial difficulties, domestic violence or clinical depression (English, 2002). Patients who raise these issues must be referred for professional counseling.

Patient-Audiologist Communication

A patient's health outcomes can be improved with good patient-doctor communication. It has long been shown that good communication results in better emotional health of the patient, better symptom resolution, better functional and physiologic status, and better pain control

(Stewart, 1995). A key component in the strength of rapport is the quality of empathy that the healthcare professional portrays. The concept of empathy has been debated for many years in the medical literature; however empathy is most often defined as a multidimensional quality of involving affective and cognitive factors, and is demonstrated through behaviors. Norfolk, Birdi & Walsh (2007) describe empathy as involving empathic motivation, or the desire to understand the patient's perspective, empathic skills, or the ability to understand the patient's perspective, communication skills, and empathic understanding. Empathic motivation was implicit in patients' descriptions of rapport building factors, with emphasis on the importance of being aware of one's motivational sources. The individual's expectations shape the motivation and initial dialogues, and set the tone for the appointment. Two levels of empathic skills are noted to be important – picking up clues, such as noting that a patient is holding a hearing aid model up to their own ear, and building perspectives from these clues, such as noting the patient may be worried about the cosmetics of the hearing aid. Empathic understanding was defined in this study as a shared understanding or connection between the patient and the physician. A successful patient-physician relationship requires all of these to be present and utilized. It is likely that this is the case for the patient-audiologist relationship as well.

There are many outside factors that can influence the rapport between the healthcare professional and patient, ranging from those related to the patient, the professional, and the environment. Patient factors that may impact rapport include personality characteristics, self-awareness, health beliefs, his/her present mood, his/her communication skills, and the complexity of the current problem. Factors impacting healthcare professional rapport may include, but are not limited to, personality characteristics, professional confidence, self-awareness, past experiences, and present mood. Environmental factors for rapport may include

practice setting, including lay-out and lighting, available resources, time of day or week, and number of other patients waiting (Norfolk, Birdi, & Walsh, 2007). Although few of those factors can be adjusted at the moment of the meeting, it is important to recognize that some factors – such as a busy Monday with a long wait time for patients, might be out of the audiologist's control. However, it is important to acknowledge these factors and apologize to the patient for any negative experiences he/she might have had related to this issue.

Physicians need to ask a wide range of questions that involve physical aspects of the problem and also acknowledge the patient's feelings and concerns. Physicians must address the patients' understanding of the problem, expectations and motivations for treatment/therapy, and perceptions of how their problem affects the way they function in their life. Patients need to believe that they are active participants in their own care and that their problems have been fully addressed (Ekberg, Grenness & Hickson, 2014; Stewart, 1995). Patients are often interrupted during their description of their problems with closed, directed questions by physicians, reportedly within an average of 18 seconds into a case history (Beckman & Frankel, 1984). Patients may fail to divulge other significant concerns due to these types of interruptions. Physicians and other healthcare professionals, such as audiologists, must make a concerted effort to encourage patients to discuss all their main concerns without interruption or premature closure to enhance satisfaction and efficacy. Although this may seem like it would add excessive amounts of time to appointments, it has been reported that a maximum of two and half minutes is sufficient time for patients to express their feelings during an average medical consultation (Beckman & Frankel, 1984).

In a study of a medical group practice in an urban area, patients and practitioners agreed on what problems would require a follow-up visit less than half the time. When problems were

mentioned by both the practitioner as well as the patient, they were more likely to have follow-up when compared to problems discussed only by the practitioner or only by the patient.

Additionally, patients reported greater improvement of problems at follow-up appointments when both the practitioner and patient agreed that the problem required follow-up (Starfield et al., 1979).

Hearing aid concerns raised by patients are often psychosocial in nature with negative emotions attached. However, Ekberg, Grenness & Hickson (2014) found that these concerns were not typically addressed during the appointment by the audiologist, with technical information, such as size and color, addressed instead. Patients often re-raised their concerns at later dates, however the communication mismatches had already occurred and greater time needed to be devoted to addressing these concerns than if they had been addressed when they were initially brought up. Therefore, addressing the concerns as they are voiced is very important for both time management and patient satisfaction. This emphasizes the importance of the patient-doctor communication and cohesiveness to address problems and schedule appropriate follow-up appointments.

Techniques to Improve Communication Incorporating Concepts from the Biopsychosocial Model

It has been shown that allowing the patient to initiate the consultation and lead conversation results in higher awareness of the patient's problems by the physician (Stewart, McWhinney, and Buck, 1979). For audiologists, this translates to the need to allow the patient to drive conversation topics and to provide appropriate counseling. Utilizing questionnaires, such as the Client Oriented Scale of Improvement (COSI), available through the National Acoustic Laboratories, can help the audiologist direct conversation while allowing the patient to address

and emphasize his/her main concerns (Dillon, James & Ginis, 1997). If the client is not concerned with cosmetics but is very concerned with conversations in a restaurant, time would be better spent discussing noise reduction techniques than discussing colors and shell types of hearing aids. This questionnaire can also be utilized after a hearing aid fitting to ensure that the patient's main concerns are validated and that performance has increased in appropriate areas. This could also provide quantitative data that can be reviewed with the patient and is statistically valid (Dillon, James & Ginis, 1997).

Teaching Counseling and Empathy to Audiologists

With the knowledge that counseling skills, including communication and competence, is one of the keys to successful patient interaction, it would seem logical for this to be part of the graduate coursework for audiology. Many studies (including Crandell, 1997; Crandell, McDermott & Pugh, 1996; and Luterman, 1996) have shown that counseling is critical in the rehabilitation of persons with hearing handicaps, including determining that patients who receive counseling not only wear their hearing aids more but have greater perceived reduction in hearing handicap (Brooks, 1979). Thus, counseling skills are critical to adherence. It is also well-reported in the literature that patients do not believe that their audiologists understand their problems (Glass & Elliott, 1992; Martin, Krall & O'Neal, 1989).

This breakdown may occur due to many factors, including a mismatch in communication intent. An example of a communication mismatch can be as simple as a patient remarking that he/she feels self-conscious when he/she wears his/her hearing aids in public. Oftentimes, the clinician may follow this remark by stating that hearing aids are small and not noticeable. While this response is not technically wrong, it may not get to the root of the patient's concern and the patient might feel like their concerns were not heard. The audiologist responded with his/her

“thinking mind” with a technical comment whereas the patient was expressing himself/herself through their “feeling mind.” This is a missed opportunity to show empathy and concern.

With a quick literature review it is simple to find that there is a deficiency in coursework in counseling.

Counseling Coursework

Although many studies have focused on the audiology master’s program coursework, much can be extrapolated from this. A series of studies done in the mid to late 1990s examined the availability of counseling coursework in the curriculum of audiology graduate programs. Culpepper, Mendell & McCarthy (1994) used a survey to examine the counseling requirements among Educational Service Board (ESB)-accredited audiology or speech-language pathology programs and were then compared to a previous 1984 survey (McCarthy, Culpepper & Lucks, 1986). Although they had previously endorsed the importance of a standard of education for teaching counseling skills to communication disorders programs which included both courses and practicum, they found that there were few differences a decade after the initial study. The types of experiences were similar and courses offered, whether in the department of speech and hearing sciences or outside it, were also similar. However, they noted a decrease in the number of non-departmental courses that addressed communication disorders. They also found an increasing interest in counseling skills that had not been met with appropriate coursework. They noted that as counseling topics became more specialized, the percentage of available coursework decreased – as would be expected. University programs were more likely to include “general principles of counseling” or “family counseling” than their example of “counseling individuals with laryngectomy”. Perhaps most discouragingly, although 94% of the departments surveyed offered counseling courses, the courses were required in only 22% of the programs that offered

them. The majority of the programs (62%) reported that less than a quarter of their graduating students had elected to take a course in counseling.

Following this survey, Crandell (1997) continued to survey audiology graduate programs regarding the reasons counseling courses were not offered. The most common reasons stated for not offering this coursework included financial reasons, shortages in educators, and time constraints (keeping in mind that the requirement for becoming an audiologist during this period was a Master's degree, which was generally a two-year program). It was also reported by these University programs that they anticipated that students would acquire two-thirds of their counseling knowledge during clinical activities, such as during the Clinical Fellowship Year (CFY), which was a post-graduation requirement for audiology licensing at that time.

The current Council on Academic Accreditation (CAA) accreditation standard (2014) for audiology programs is not descriptive in their expectations for counseling coursework. The standard states that there must be opportunity for the student to acquire knowledge in client/patient characteristics, cultural diversity and educational, vocational, social, and psychological effects of hearing impairment, and their impact on the development of a treatment program.

Current Accreditation Commission for Audiology Education (ACAE) standards (2005) require additional communication standards for students graduating from ACAE accredited programs. The student must be able to “communicate effectively, both orally and in written form, with patients, families, caregivers, and other healthcare and service providers; demonstrate empathy for patients and families; demonstrate respect for all individuals encountered in audiologic practice, regardless of disability, income, gender, sexual orientation, race, religion, or national origin; demonstrate sensitivity to the psychosocial dynamics of the doctor/patient

relationship; and be aware of the social, psychological and economic forces affecting diverse patient populations.” Programs are required to describe the courses that this knowledge and competency is addressed in and describe how the students will demonstrate the ability or skill to apply this knowledge. This wording does not specify how much counseling coursework is required; however there is mention of the biopsychosocial model.

Teaching Counseling Skills

Although not all programs offer counseling coursework, studies have shown that counseling skills and empathy can and should be taught to healthcare providers (Shapiro, Morrison & Boker, 2004; Wheeler & Barrett, 1994). Graduate training measures counseling success in terms of explaining technical, often complicated, information to instructors and preceptors. Students are taught to share information with patients by avoiding jargon and technical explanations. Both of these approaches emphasize the audiologist’s need for informational counseling, although patients often speak in terms of emotions. The ability to differentiate between a content question and emotional message is important, although truly effective counseling requires the clinician validating that the patient was “heard.” If the patient requests information, the clinician’s response must be information-based. Conversely, if the patient expresses an emotion, the clinician’s response must let the patient know that their emotions are not only recognized but also respected.

English, Mendel, Rojeski & Hornak (1999) completed a preliminary study to investigate whether audiology graduate students tend to provide technical information to patient adjustment questions or concerns. They found that technical responses were provided approximately 88% of the time prior to coursework on counseling. They also analyzed if there was a change in the number of technical responses after taking a counseling course. They noted a significant

increase in the number of affective responses to affective comments, which they attributed to the students' improved counseling abilities.

Noting that there were several limitations to the initial study, including the small number of subjects, the absence of a control group and inability to control for the pre-test bias, English Rojeski & Branham (2000) utilized two groups of Doctor of Audiology (Au.D.) students enrolled in distance learning programs to replicate the study. One group received counseling coursework and the other did not. The researchers found that these students were just as likely to “mismatch” their responses, such as a technical response to an affective comment, as the graduate students in the previous study. These students were also significantly more likely to have affective responses after the coursework as in prior studies, although the ratio of change was not large. This study also demonstrated that an internet-delivered class can be capable of modifying counseling behavior. A specific and predictable learning path was also identified. Students recognized the conventional responses might not be the most helpful responses first. Then after time, they began to make attempts to modify their responses. Finally, they began to “find their stride” and develop a personal counseling philosophy. This study suggested that counseling and empathy can be taught but also underscores the importance of continuing counseling education.

Chapter IV

Medical Memory and Literacy

The ability to recall information provided in consultations with medical professionals is integral for patients' health and well-being. The information remembered, regardless of its accuracy, is used for adherence with health regimens, decision-making, and general health understanding.

Although clinicians are presumably careful to explain complete test results, sometimes the information may be presented in a manner that is too complicated for the patient to understand or the patients simply cannot recall it. A study by Martin, Krueger & Bernstein (1990) revealed that patients' understanding of counseling might be low. They found that in a cohort of 35 adults with hearing impairment who were surveyed shortly after they had an audiologic assessment and counseling, none of the subjects were able to explain an audiogram and only 46% were able to accurately explain their degree of hearing loss. The reasons for this lack of knowledge are likely varied; however, two main concepts can be suggested: medical memory and medical literacy. Researchers have begun to identify how much information is remembered, how accurately that information is recalled, how long that information is retained, and whether other factors such as age and gender influence memory abilities.

Information given in written format is more permanent, however patients must be able to read and accurately comprehend this information to be able to translate it to their health regimens, health decision making, and general health understanding. Various studies have examined the average medical literacy level at which health literature should be written . Other factors may include font size, font type, use of graphs and pictures, as well as additional outside factors that may influence retention and recall.

Medical Memory

Medical memory or recall is the ability to remember information provided in a medical setting. Medical memory is affected by many factors, including perceived importance of the information and the age of the patient. There are several things healthcare providers, including audiologists, can do to facilitate better medical recall in regards to the patient's care plan to increase adherence.

Anderson, Dodman, Kopelman & Fleming (1979) conducted a study on patient recall in their rheumatology clinic. They found that the total recall of information was around 40%, although patients misconstrued approximately 48% of what they thought they remembered. They also noted an age effect, with patients over the age of 70 years able to recall less information than those younger than 70. Recall regarding treatment was higher than the recall regarding diagnosis. Additionally, and most crucially, they found that the more information was given the less information was retained. Other studies (Ley, 1985; Rice, Meyer & Miller, 1989) have found patient recall rates as low as 17.1% and as high as 60% for medical care information.

McGuire's 1996 study was unique in that it focused on medical recall with several factors. The groups were divided into a young age group (ages 18-44) composed of local students in a psychology class and an older age group (age 60-82) recruited from local senior citizens' centers. The groups were further divided by information organization. Information was either organized in a logical, common order (test results, diagnosis, treatment and miscellaneous) or in an unorganized manner (treatment, test results, diagnosis, treatment, diagnosis, test results, treatment, miscellaneous, and treatment). The organized treatment was structured to resemble the typical organization found in prose material and cognitive research, whereas the unorganized condition may be considered unorganized in prose material and cognitive standards but not in a

typical medical interaction with a physician (McGuire, 1996) where several pieces of medical results may need reviewed and explained separately. Participants' recall of information was tested immediately after the information was given, one week after the information was given, and one month after the information was given. Additional factors, such as education, self-rated memory status, self-rated medical knowledge; depression index, and vocabulary were taken into account.

McGuire's study found that the amount of medical information typically retained was markedly lower than previously noted for the immediate recall situation in both the organized and "disorganized" conditions. They found that participants remembered approximately 11.4 to 24.6% of the information. This may be related to the length of the discussion, which was approximately eight minutes long and included 1,358 words. This effect has been noted in several studies, including that of Ley & Spelman (1965) who noted that when the amount of information was short, in this case 12 stimulus statements, that up to 40% of the information could be recalled. However, when they presented a passage, that at 150 words was still short, the recall declined to 37%. More notably, the passages used in Rice, Meyer & Miller (1989) were either 943 or 958 words with a resulting 17.1% recall for free recall with an increase to 35.3% in probed recall conditions.

McGuire also found an age effect. It is commonly reported that younger adults perform better on tasks related to recall (Bankoff & Sandberg, 2012; Burke & Light, 1981; Craik, 1977) although the ability to generalize these results to everyday memory tasks and the impact of working memory has been questioned. McGuire noted that younger adults recalled more of the target information in immediate recall. However, at the one week and one month testing periods, this difference was no longer significant. There are several known factors of memory loss with

aging, many recently addressed in Myerson, Emery, White & Hale (2003); however, a decline in executive working memory that increases with age may be a large factor in this result. The one week and one month situations relied less on working memory and more on long-term memory, a factor which might account for the variance in scores when compared with previous studies.

In the McGuire (1996) study, there was no effect of organization on recall of the medical information. The author noted that Craik (1992) and Hartley (1989) had previously suggested that older adults have greater difficulty than younger adults when making connections between incoming information and information stored in memory but that was not found in this study. Hess & Tate (1991) suggested that the extent of previous medical knowledge and the new knowledge's consistency with this prior knowledge is crucial for memory function. This theory was reinforced by Rice and Okun (1994) who found that, at least for older readers, medical information that confirmed an existing belief was remembered better than information that contradicted these previously-held beliefs. This is consistent with the psychological concept of "schema." A schema is the personal theory formed by an individual over the years. Anything inconsistent with the schema tends to be forgotten or worse, misinterpreted.

McGuire (1996) also noted a significant time effect. While subjects remembered an average of 22.1% during immediate recall this percentage dropped to 17.1% just one week later. Oftentimes, patients will be asked questions regarding the session immediately by family members or friends. This provides the opportunity to rehearse and review the important information. At one month after the session the subjects remembered an average of 12.8%. Although this is a large difference, it is noted that the impact of repeated testing and the knowledge by the subjects of repeated testing is a known confounding variable for this study. Another study by Reese and Hnath-Chisolm (2005) found increased content recall after one

month of wearing hearing aids when compared to immediately after hearing aid orientation, suggesting patients may learn more about the hearing aids over the trial period. More research is warranted into the effect of time on medical recall in audiology patients.

Additional factors, including anxiety and perceived importance of the information, also play a role in the ability to recall information. When events are stressful or emotional – such as when an audiologist states “you have hearing loss and this will affect your everyday activities for the rest of your life,” this central message can become the primary focus. Peripheral information, such as follow-up appointments and compliance, can become forgotten before being stored into memory. In a group of outpatients, it was determined that moderate anxiety levels in patients promoted the best recall, when compared to mild or high anxiety levels (Ley, 1979). Another often cited factor in recall is the perceived importance of the information. Statements about diagnosis, such as degree of hearing loss, may be viewed as of higher importance than those related to the treatment (e.g. hearing aids). A good strategy to draw attention to the treatment instructions is to place the instructions first in the message, with an emphasis on their importance (Bradshaw, Ley & Kinsey, 1975). For example, “wear your hearing aids for at least 12 hours a day” will be remembered more often and more accurately than “wear your hearing aids as much as you can.” Additionally, patients who take an active role in their medical interviews were able to recall more information (Dillon, 2012), furthering the evidence that good counseling and patient-audiologist relationships are important for adherence.

The inability to remember medical information may have serious consequences for patients who cannot adhere to information they cannot recall. It is important for clinicians to consider the immediacy of medical information, the age of the patient, the length of information provided, information organization, and medical knowledge of the patient. Important healthcare

decisions should be made during a time when the patients remember as much accurate information as possible. Additionally, it is important to phrase important information in a direct way and to emphasize its importance while discussing it. The patient's medical knowledge and health literacy should always be considered when formulating a treatment plan.

Health Literacy

It is often assumed that patients in an audiology clinic will forget information or mishear due to their hearing loss. However, the underlying issue may also include the fact that information may be presented at a level too difficult for patients to understand. Health literacy is defined as the degree to which an individual can process, obtain, and understand basic health information and the services needed to make appropriate health decisions (Understanding Health Literacy and Its Barriers, 2004). To be functionally health literate, an adult must be able to look up a professional in a telephone book or on a website, process the information provided by the clinician such as graphs, lists, and charts, as well as make the decisions that require comparing, contrasting, and making cost-benefit analyses about the possible treatments.

The average reading level across the United States has been reported as approximately the 9th grade reading level according to the National Assessment of Adult Literacy (2003). People typically read recreationally approximately two grades below their actual skill level, so the average adult recreationally reads at approximately the 7th grade reading level. The average person can tolerably read up to an 11th grade reading level, approximately the level of the average newspaper. Additionally, approximately 14% or 30 million adults in the United States function at the “below basic” level. This is defined as “not having adequate reading skills for daily life”. More than 20% of adults read at or below the 5th grade level in the United States. This translates to adults who cannot read safety instructions or understand medical directives. It

is known that adults who pick up information they cannot understand often put it down or give up entirely without reflecting on what happened. For this reason, experts recommend writing documents for the general public at the 9th grade level. However, it is also recommended that any health and safety information be written at the 5th grade level. This translates to writing patient information between the 3rd and 7th grade level to reach the greatest audience.

Zazove, Meador, Reed & Gorenflo (2013) found that d/Deaf individuals in Michigan had lower reading levels than the general public, an average of a low 6th grade reading level. Individuals with higher reading levels were associated with higher education levels, spoken English use, adult-onset hearing impairment and a hearing spouse. Those individuals who identified themselves as part of the Deaf community also tended to have lower reading levels. These findings can likely be generalized to other areas of the country as well. It is important to take into account the patient's lifestyle and language experience in creating visual counseling materials to facilitate readability.

The U.S. Census Bureau (Ryan & Siebens, 2012) has reported statistics on the educational attainment levels by age, sex, race, and more. At the time of the study, 85.3% of Americans held a high school degree or more. However, only 27.9% of the population held a bachelor's degree. For the Midwest region alone, 88.1% of the population held a high school degree, the highest percentage of any region, and 26.5% of the population held a bachelor's degree or more. Of the geriatric population (65 years or older) 76.5% held a high school degree and 20.2% had at least a bachelor's degree. Of the adult population (45 to 64 years) 87.7% held a high school degree and 28.6% held a bachelor's degree or more. The rate of high school graduation (84.5% and 85.9%) and bachelor's degrees (28.4% and 27.4%) was similar between men and women, respectively. The largest disparity was among the races. For persons who

identified as non-Hispanic whites, 90.4% held a high school degree and 31.1% held a bachelor's degree or more. For persons who identified as Black, 81.4% held a high school degree and 17.6% held a bachelor's degree or more. For persons who identified as Asian, 85.3% held a high school degree and 49.7% held a bachelor's degree or more. For persons who identified as Hispanic, 60.9% held a high school degree and 12.6% held a bachelor's degree or more. This illustrates a race disparity in education that should be taken into account when working with different ethnicities. These percentages are expected to continue to increase for future generations.

With this knowledge, it is important to recognize that many printed patient education materials, including the hearing aid instruction guides, may often be too difficult for the patient to understand. Audiologists often assume that hearing aid instruction guides can be a resource for troubleshooting simple hearing aid problems, such as a battery change or a wax trap change. However, it may be that patients' understanding of these concepts may be impaired by a lack of appropriate and effective language. The Federal Food and Drug Administration's guidelines on medical device manuals include not exceeding the sixth or seventh grade reading level, limiting sentences to 25 words or fewer and limiting words to three syllables or less among other suggestions. However, just referring to approximate appropriate reading level, does not necessarily guarantee that material can be easily understood (Backinger & Kingsley, 1993). In addition, although these may be effective guidelines, manufacturers are not legally bound or required to follow the FDA's suggestions.

Nair & Cienkowski (2010) found that in the audiology-specific context most patients likely had lower health literacy than functional reading literacy. They also noted that the health literacy of the population with hearing loss was also low. These patients likely did not

understand portions of the information presented during a consultation and likely had difficulty understanding some sections of the hearing aid instruction guide. They also noted that audiologists' jargon was not seemingly impacted by the patient's demographic factors. This inability to understand information was attributed to increased repair appointments, overall hearing aid satisfaction, and their opinion of their healthcare professional.

McCarthy et al. (2012) found that overall; individuals with lower literacy performed significantly worse in recalling information when compared to those with marginal or adequate health literacy immediately after the encounter. While compared to those with adequate health literacy, those with low and marginal health literacy showed lowered recall scores after 15 minutes, suggesting that health literacy helps to retain health knowledge.

Health literacy is an important factor to consider during patient interaction. Information must be presented at an appropriate level for patients to understand. Additionally, it is helpful to keep in mind that those patients with lower health literacy are more likely to forget health information and may need more and repeated instruction.

Utilizing Visual Materials

Oftentimes clinicians provide written or visual materials to reinforce information given during appointments. These materials, whether handwritten information sheets, formal brochures, instruction manuals or computer printouts, are expected to supplement recall of information given and sometimes to provide additional information. These materials often provide written paragraphs and pictographs to convey information. Although this may seem like a logical approach, it is important to validate these ideas and verify one's audience.

To address the question of which method of information exchange was most effective amongst written, verbal, and visual methods, Thomson, Cunningham, and Hunt (2001) divided

patients into three groups. Each group was provided with written, verbal, or visual information. Each patient (paired with a parent) assessed recall of information through questionnaire 10-15 minutes after initial instruction and again eight weeks later. They found very little difference in recall between the three methods, noting that parents were more attentive to verbal instruction than children. However, most importantly, they noted that verbal information should not be provided to patients without supplementation by written and/or visual information.

When patients are provided written information and verbal information simultaneously, especially after a stressful event or diagnosis, approximately 36% of patients will not remember being given verbal instructions and will only follow the written instructions. This may be attributed to stress and confusion. Verbal communication may not be enough in these cases and written recommendations should be mandatory for important information (Blinder, Rotenberg, Peleg & Taicher, 2001). However, it is noted that written instructions often present difficulties to patients with low education, low literacy level, and/or non-native English speakers and may not be appropriate for every patient (Kessels, 2003).

When written instructions are not a viable option, cartoons or pictures are sometimes used to improve adherence. Previous studies (including Delp & Jones, 1996) have shown that when groups are compared with similar age, gender, and level of education the patients given cartoon instructions were more likely to read the instructions. Of the patients given cartoons, 98% of them reported reading the instructions and they answered approximately 46% of the post-care questions of recall correctly. They were also more compliant with 77% following instructions. Of the patients who were not provided cartoons, 79% reported reading the instructions. This group was only able to answer 6% of the post-care questions correctly however 54% of the group reported compliance with care instructions. Additionally it was noted

that patients who had less than a high school education demonstrated even larger differences between the two groups in terms of comprehension and compliance.

Simple pictographs with clear links between the information in the picture and its meaning are proven to be the most effective for increasing recall and compliance. Mean short-term recall with pictographs used to supplement verbal instruction is approximately 85% (Houts et al., 2001) which is greatly increased when compared to the recall percentage in the verbal only condition discussed above.

In addition to pictographs and written information, multi-media options are also available to clinicians. Based on advances in technology, videotaped instructions and computer-aided information are now more readily available. A brief search on the internet, including manufacturers' websites and YouTube, reveals hundreds of medical instruction videos recorded by both clinicians and laypeople. For the search term "hearing aid wax trap" on YouTube, there were over 490 videos (YouTube, 2015). Although videos are readily available, little research has shown utility in videos. Barhordar, Pollard & Hobkirk (2000) noted that an informational leaflet and a multimedia program were both effective. However, the multimedia presentation resulted in a slightly better short-term recall than the leaflet. Additional research continues to show mixed results, and more research is needed on this subject. However, it is important to note that elderly patients are often uncomfortable with technology or may not have Internet access at home. Visual material, such as pamphlets and videos, can be carried in a bag, accessed on a smartphone, or even watched on the internet and has been shown to increase recall immediately as well as over time. Overall, the utilization of visual materials can increase recall and understanding of health information. Without understanding or memory of directions and advice, a patient is not able to adhere to directions.

Clearly, more research is needed in this area to address current options for information access and its role in patient care and health literacy.

Chapter IV

Conclusions

With the knowledge that the biopsychosocial conceptual model is the current model for patient care, it is important to shift thinking towards patient-centered care. Patients' social and emotional needs must be addressed to create a care plan that works for both the patient and the clinician and to increase adherence to their care plan after it is created. Current adherence rates are low and many adults in America could benefit from audiological services and amplification which they are not receiving at this time. However, it is also important to note that standards of patient care cannot be seen as a rigid dichotomy between biomedical and biopsychosocial models of care.

It is important to remember that there are positive and negative aspects to each model and the reality is that most interactions fall somewhere between the models. The biomedical model strives to find a cure to pathologies which is the desired outcome for most patients. This model is not against empathy or understanding, however the pathology is the primary focus.

Additionally, some patients may feel reluctant to provide input into their care plan. Healthcare professionals often have years of training and experience in their field and are experienced with creating care plans. Patients may also be in denial about their deficits or have altered their lifestyles to cope with them. Although a lot of what the clinician says and does can affect adherence, the patient must also be part of the team. A patient who is not motivated to follow a care plan will not have a high adherence rate. The clinician cannot follow the patient and coach them through every aspect of their day.

There are many additional opportunities for patient-centered care and adherence research in the field of audiology. For students who are learning clinical skills the idea of patient-

centered care can be a difficult concept. They must focus on basic assessment abilities while trying to develop a strong rapport with their patient. The role of the preceptor in the student's abilities to provide patient-centered care should not be overlooked and additional research into the importance of good preceptors and mentors should be examined. Communication strategies for the hearing impaired in the clinical setting should be analyzed, including the impact on medical recall when utilizing these strategies and audiologists' adherence to these strategies during appointments. Additionally, more research is warranted in the long-term effects of group aural rehabilitation sessions on adherence and medical recall. In regards to the visual materials utilized in healthcare, additional research should be completed on the use of multimedia, such as YouTube videos, with the hearing impaired population including the accuracy of closed captioning in these videos and accuracy of information available on the internet. Reading levels and readability of manufacturer and other medical brochures should also be addressed and more specific guidelines should be created to optimize adherence.

References

- Accreditation Commission for Audiology Education. (2005). *Accreditation standards for the doctor of audiology (Au.D.) program*.
- Anderson, J.L, Dodman, S., Kopelman, M., & Fleming, A. (1979). Patient information recall in a rheumatology clinic. *Rheumatology and Rehabilitation*, 18(1), 18-22.
- Backinger, C.L., Kingsley, P.A. (1993). Write It Right: Recommendations for Developing User Instructions for Medical Devices Used in Home Health Care. HHS Publication FDA 93-4258
- Bankoff, S.M., & Sandberg, E.H. (2012). Older adults' memory for verbally presented medical information. *Educational Gerontology*, 38(8), 539-551.
- Bartlett, E.E., Grayson, M., Barker, R., Levine, D.M., Golden, A., & Libber, S. (1984). The effects of physician communication skills on patient satisfaction; Recall and adherence. *Journal of Chronic Diseases*, 37, 755-764.
- Beckman, H.B., & Frankel, R.M. (1984). The effect of physician behaviour on the collection of data. *Annals of Internal Medicine*, 101, 692-6.
- Blinder, D., Rotenberg, L., Peleg, M., & Taicher, S. (2001). Patient compliance to instructions after oral surgical procedures. *International Journal of Oral and Maxillofacial Surgery*, 30, 216-9.
- Bradshaw, P.W., Ley, P., & Kincey, J.A. (1975). Recall of medical advice: Comprehensibility and specificity. *British Journal of Social and Clinical Psychology*, 14(1), 55-62.
- Brighina, F., Saporito, V., Aloisio, A., Morreale, C., & D'Agati, A. (2005). Continuity of healthcare for headache patients: a problem of communication between headache specialists and general practitioners. *The Journal of Headache and Pain*, 6(4), 310-311.

- Brooks, D.N. (1979). Counseling and its effect on hearing aid use. *Scandinavian Audiology*, 8, 101-107.
- Burke, D.M., & Light, L.L. (1981). Memory and aging: The role of retrieval processes. *Psychological Bulletin*, 90, 513-546.
- Cavanaugh, J.C. (1984). Effects of presentation format on adults' retention of television programs. *Experimental Aging Research*, 10, 51-53.
- Clark, J.G. (1999). Working with challenging patients. *Audiology Today*, 11(5), 13-15.
- Collins, J. G. (1997). Prevalence of selected chronic conditions: United States 1990–1992. *Vital and Health Statistics*, 10(194). Hyattsville, MD: National Center for Health Statistics.
- Council on Academic Accreditation. (2014). *Standards for accreditation of graduate education programs in audiology and speech-language pathology*.
- Craik, F.I.M. (1977). Age differences in human memory. In J.E. Birren & K.W. Schaie (Eds.). *Handbook of the psychology of aging* (1st ed., pp. 384-420). New York: Van Nostrand Reinhold.
- Craik, F.I.M. (1992). *A processing view of human memory*. Paper presented at the annual meeting of the American Psychological Association, Washington, D.C.
- Crandell, C.C., (1997). An update on counseling instruction with audiology programs. *Journal of the Academy of Rehabilitative Audiology*, 15, 77-86.
- Culpepper, N.B., Mendel, L.L., & McCarthy, P.A. (1994). Counseling experience and training offered by ESB-accredited programs: An update. *ASHA*, 36(6), 55-58.

- Davis, A., Smith, P., Ferguson, M., Stephens, D., & Gianopoulos, I. (2007). Acceptability, benefit and costs of early screening for hearing disability: A study of potential screening tests and models. *Health Technology Assessment, 11*, 1–294.
- Delp, C., & Jones, J. (1996). Communicating information to patients: The use of cartoon illustrations to improve comprehension of instructions. *Academic Emergency Medicine, 3*(3), 264-70.
- Delamater, A.M. (2006). Improving patient adherence. *Clinical Diabetes, 24*, 71-77.
- Dillon, H., James, A., & Ginis, J. (1997).. Client oriented scale of improvement (COSI) and its relationship to several other measures of benefit and satisfaction. *Journal of the American Academy of Audiology, 8*(1), 27-43.
- Dillon, P.J. (2012). Assessing the influence of patient participation in primary care medical interviews on recall of treatment recommendations. *Health Communication, 27*(1), 58-65.
- Ekberg, K., Grenness, C., & Hickson, L. (2014). Addressing patients' psychosocial concerns regarding hearing aids within audiology appointments for older adults. *American Journal of Audiology, 23*, 337-350.
- Engel, G.L. (1960). A unified concept of health and disease. *Perspectives in Biology and Medicine, 3*(4), 459-485.
- Engel, G.L. (1976). Too little science: The paradox of modern medicine's crisis. *The Pharos, 39*, 129-133.
- Engel, G.L. (1977). The need for a new medical model: A challenge for biomedicine. *Science, 196*(4286), 129-136.

- Engel, G.L. (1978). The biopsychosocial model and the education of health professionals. *Annals of the New York Academy of Sciences*, 310, 169-181.
- English, K. (2002). *Counseling children with hearing impairment and their families*. Boston, MA: Allyn and Bacon.
- English, K., Mendel, L.L., Rojeski, T., & Hornak, J. (1999). Counseling in audiology, or learning to listen: Pre- and post-measures from an audiology counseling course. *American Journal of Audiology*, 8(1), 34-39.
- English, K., Rojeski, T., & Branham, K. (2000). Acquiring counseling skills in mid-career: Outcomes of a distance education course for practicing audiologists. *Journal of the American Academy of Audiology*, 11, 84-90.
- Glass, L., & Elliot, H. (1992). The professionals told me what it was but that was not enough. *SHHH*, 13, 26-28.
- Grenness, C., Hickson, L., Laplante-Levesque, A., & Davidson, B. (2014a). Patient-centred care: A review for rehabilitative audiologists. *International Journal of Audiology*, 53, 60-67.
- Grenness, C., Hickson, L., Laplante-Levesque, A., & Davidson, B. (2014b). Patient-centred audiological rehabilitation: Perspectives of older adults who own hearing aids. *International Journal of Audiology*, 53, 68-75.
- Gzil, F., Lefevre, C., Cammelli, M., Pachoud, B., Ravaud, J., & Leplege, A. (2007). Why is rehabilitation not yet fully person-centred and should it be more person-centred? *Disability and Rehabilitation*, 29(20-21), 1616-1624.

- Hambly, H., Robling, M., Crowne, E., Hood, K., Gregory, J.W. (2009). Communication skills of healthcare professionals in paediatric diabetes services. *Diabetic Medicine: A Journal of the British Diabetic Association*, 26(5), 502-509.
- Hartley, J.T. (1989). Memory for prose: Perspectives on the reader. In L.W. Poon, D.C. Rubin, & B.A. Wilson (Eds.). *Everyday cognition in adulthood and late life* (pp. 135-136). New York: Cambridge University Press.
- Haynes RB, Taylor DW, Sackett DL: Compliance in health care. Baltimore, Md., Johns Hopkins University Press, 1979
- Heineken, J. (1998). Patient silence is not necessarily client satisfaction: Communication problems in home care nursing. *Home Healthcare Nurse*, 16(2), 115-120.
- Hess, T.M., & Tate, C.S. (1991). Adult age differences in explanations and memory for behavioral information. *Psychology and Aging*, 6(1), 86-92.
- Houts, P.S., Bachrach, R., Witmer, J.T., Tringali, C.A., Bucher, J.A., & Localio, R.A. (1998). Using pictographs to enhance recall of spoken medical instructions. *Patient Education and Counseling*, 35(2), 83-88.
- Kessels, R.P.C. (2003). Patients' memory for medical information. *Journal of the Royal Society of Medicine*, 96, 219-222.
- Kochkin, S., & Rogin, C. M. A. (2000). Quantifying the obvious: The impact of hearing instruments on quality of life. *Hearing Review*, 7(1), 8-34.
- Ley, P. (1979). Memory for medical information. *British Journal of Social Psychology*, 18(2), 245-255.

- Ley, P. (1985). Doctor-patient communication: Some quantitative estimates on the role of cognitive factors in non-compliance. *Journal of Hypertension*, 3, 51-55.
- Ley, P., & Spelman, M.S. (1965). Communications in an out-patient setting. *British Journal of Social and Clinical Psychology*, 4, 114-116.
- Lin, F. R., Metter, E. J., O'Brien, R. J., Resnick, S. M., Zonderman, A. B., & Ferrucci, L. (2011). Hearing loss and incident dementia. *Archives of Neurology*, 68, 214-220.
- Matthews, D.A., Sledge, W.H., & Lieberman, P.B. (1987). Evaluation of intern performance by medical inpatients. *The American Journal of Medicine*, 83(5), 938-44.
- Martin, F. N., Krall, L., & O'Neal, J. (1989). The diagnosis of acquired hearing loss: Patient reactions. *ASHA*, 31, 47-50.
- Martin, F., Krueger, J., & Bernstein, M. (1990). Diagnostic information transfer to hearing-impaired adults. *Texas Journal of Audiology Speech Language Pathology*, 16, 29-32.
- McCarthy, D.M., Waite, K.R., Curtis, L.M., Engel, K.G., Baker, D.W., & Wolf, M.S. (2012). What did the doctor say? Health literacy and recall of medical instructions. *Medical Care*, 50(4), 277-282.
- McCarthy, P. A., Culpepper, N. B., & Lucks, L. E. (1986,). Variability in counseling experiences and training among ESB-accredited programs. *ASHA*, 49-52.
- McGuire, L.C. (1996). Remembering what the doctor said: Organization and adults' memory for medical information. *Experimental Aging Research*, 22, 403-428.

- Meichenbaum D, Turk DC: Facilitating Treatment Adherence: A Practitioner's Guidebook.
New York, Plenum Press, 1987
- Michie, S., Miles, J., & Weinman, J. (2003). Patient-centredness in chronic illness: What is it and does it matter? *Patient Education and Counseling*, 51, 197-206.
- Myerson, J., Emery, L., White, D.A., & Hale, S. (2003). Effects of age, domain, and processing demands on memory span: Evidence for differential decline. *Aging, Neuropsychology, and Cognition*, 10(1), 20-27.
- Nair, E.L., & Cienkowski, K.M. (2010). The impact of health literacy on patient understanding of counseling and education materials. *International Journal of Audiology*, 49, 71-75.
- National Acoustic Laboratories. Outcome measures: COSI and HAUQ.
http://www.nal.gov.au/outcome-measures_tab_cosi.shtml.
- National Center for Education Statistics. (2003). *National Assessment of Adult Literacy*.
- National Institute on Deafness and Other Communication Disorders. (2010). Quick statistics.
- Norfolk, T., Birdi, K., & Walsh, D. (2007). The role of empathy in establishing rapport in the consultation: A new model. *Medical Education*, 41, 690-697.
- Ornstein, S.M., Nietert, P.J., Jenkins, R.G., & Litvin, C.B. (2013). The prevalence of chronic diseases and multimorbidity in primary care practice: A PPRNet report. *Journal of the American Board of Family Medicine*, 26(5), 518-524.
- Osterberg, L., & Blaschke, T. (2005). Adherence to medication. *The New England Journal of Medicine*, 353, 487-497.

- Reese, J.L., & Hnath-Chisolm, T. (2005). Recognition of hearing aid orientation content by first-time users. *American Journal of Audiology*, 14, 94-104.
- Rice, G.E., & Okun, M.A. (1994). Older readers' processing of medical information that contradicts their beliefs. *Journals of Gerontology: Psychological Sciences*, 49(3), 86-92.
- Rice, G.E., Meyer, B.J.F., & Miller, D.C. (1989). Using text structure to improve older adults' recall of important medical information. *Educational Gerontology*, 15, 527-542.
- Ryan, C., & Siebens, J. (2012, February 1). Educational Attainment in the United States: 2009.
- Salonen, J., Johansson, R., Karjalainen, S., Vahlberg, T., Jero, J.P., & Isoaho, R. (2013). Hearing aid compliance in the elderly. *B-ENT*, 9, 23-28.
- Shapiro, J., Morrison, E.H., & Boker, J.R. (2004). Teaching empathy to first year medical students: Evaluation of an elective literature and medicine course. *Education for Health*, 17(1), 73-84.
- Starfield, B., Steinwachs, D., Morris, I., Bause, G., Siebert, S., & Westin, C. (1979). Patient-doctor agreement about problems needing follow-up visit. *Journal of the American Medical Association*, 242(4), 344-346.
- Stewart, M.A. (1995). Effective physician-patient communication and health outcomes: A review. *Canadian Medical Association Journal*, 152(9), 1423-1433.
- Stewart, M.A., McWhinney, I.R., & Buck, C.W. (1979). The doctor/patient relationship and its effect upon outcome. *Journal of the Royal College of General Practitioners*, 29, 77-82.
- Thomson, A.M., Cunningham, S.J., & Hunt, N.P. (2001). A comparison of information retention at an initial orthodontic consultation. *European Journal of Orthodontics*, 23, 169-78.

- Understanding Health Literacy and Its Barriers. (2004). *National Library of Medicine*.
- Retrieved from: <http://www.nlm.nih.gov/pubs/cbm/healthliteracybarriers.pdf>.
- Veith, I. (1957). Psychiatric nosology: From Hippocrates to kraepelin. *American Journal of Psychiatry*, 114(5), 385-391.
- Wheeler, K., & Barrett, E.A.M. (1994). Review and synthesis of selected nursing studies on teaching empathy and implications for nursing research and education. *Nursing Outlook*, 42, 230-236.
- World Health Organization. (1980). *The international classification of impairments, disabilities, and handicaps*.
- World Health Organization. (2002). *The international classification of functioning, disability and health*.
- YouTube. (2015, April 2). Search term: hearing aid waxtrap. [Video File]. Retrieved from https://www.youtube.com/results?search_query=hearing+aid+waxtrap.
- Zazove, P., Meador, H.E., Reed, B.D., Gorenflo, D.W. (2013). Deaf persons' english reading levels and associations with epidemiological, educational, and cultural factors. *Journal of Health Communication*, 18(7), 760-772.